

Ak



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,579	11/15/2001	Akira Ohta	57454-278	7330
7590 11/03/2003				
McDERMOTT, WILL & EMERY				
600 13th Street, N.W.				
Washington, DC 20005-3096				
EXAMINER				
JONES, STEPHEN E				
ART UNIT		PAPER NUMBER		
2817				

DATE MAILED: 11/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

# Office Action Summary

Application No.

09/987,579

Applicant(s)

OHTA ET AL.

Examiner

Stephen E. Jones

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 6-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-12 are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 14 October 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 10/14/03 6) ☐ Other:

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Claims 6-12 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 5.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
4. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makino et al (of record) in view of Krauss et al. ("Solid State Radio Engineering") (of record).

Makino (Figs. 1, 2 and 7) teaches a microwave (i.e. high frequency) amplifier including: a nonreciprocal isolator device (1) having an input impedance lower than the output impedance (see Fig. 2); a substrate (51); an amplifier (15) receives an input signal; an output matching circuit (16) receives the amplified signal; a filter element (6) is provided with the isolator device (1) on the substrate (51); the filter (6) receives the output from the output impedance matching circuit (16) and has a cutoff frequency  $f_c$  (see Col. 4, lines 62-66) thus the filter passes a selected frequency; the filter includes an inductor (L) on the signal line and first and second capacitors between respective nodes on each side of the inductor and ground forming two signal lines to ground having capacitors on the lines (see Fig. 1); the output of the isolator is 50 ohm and the output of the amplifier (and input of the isolator circuit) is in the range of 2 to 12.5 which includes values in the range 3 to 30 ohms as claimed (Claim 3); and the cutoff frequency is between  $.75 f_0$  and  $2 f_0$  (see Col. 4, lines 33-35) which includes values between  $f_0$  and  $2 f_0$  (Claim 5).

However, Makino does not explicitly teach a harmonic processing circuit for matching of harmonics included in the output of the amplifier (Claims 1, 2). Also, Makino does not explicitly teach that the substrate (51) has a ground on the bottom surface and the amplifier has a ground, and further that via holes connect the capacitors (C in Fig. 1) through the substrate to ground (Claim 4). It should be noted that Makino does appear to show pads including via holes on the top of the substrate in Fig. 7 including some pads/holes connected to the amplifier but does not describe them in the specification.

Krauss et al. teaches that output matching circuits are used to reduce harmonics.

It would have been considered obvious to one of ordinary skill in the art to have additionally used the output matching circuit of Makino et al. as a harmonics reduction circuit (i.e. a harmonic processing circuit for matching harmonics) such as suggested by Krauss, because it would have provided the advantageous benefit of reducing the harmonics to an acceptable level (see Krauss page 418), thereby suggesting the obviousness of such a modification.

Also, it would have been considered obvious to one of ordinary skill in the art to have the capacitor lines of the filter element (6) (as shown in Fig. 1) and the amplifier of Makino to have been connected/extended through vias to a ground plane on the bottom of the substrate, because it is well-known to provide a ground plane on the bottom of main substrates including via holes from the top of the board to the bottom ground plane for grounding circuitry, and would have provided the advantageous benefit of a common ground connection between the isolator ground and the circuit board substrate ground as well as the other circuit components.

Regarding the new limitations in claim 1, it is an obvious consequence that the combination of Makino and Krauss provides a "proper output load of harmonics" since the matched from source to load condition is the most efficient condition, and the combination can be considered improved since the circuit would be more efficient than an unmatched circuit. Thus the claim language is met.

***Response to Arguments***

5. Applicant's arguments filed 10/14/03 have been fully considered but they are not persuasive.

Applicant argues that the amplifier and impedance conversion circuit of Makino are not provided on the same substrate.

Applicant's argument is not convincing. The substrate (51) of Makino is clearly common to both the impedance conversion circuit and the amplifier as shown in Fig. 7. In fact, the entire circuit is on the common substrate 51.

Applicant also argues that the Krauss teaching that output matching circuits are used for reducing harmonics is not sufficient to suggest that the output matching circuit 16 of Makino is a harmonic processing circuit.

This argument is not persuasive. Processing of harmonics (as in the present claims) in its broadest interpretation includes reducing harmonics since reducing harmonics is a form of "processing".

Furthermore, Applicant requests a reference to support the official notice that it is well-known to extend from the top of a substrate through-vias to a ground on the bottom of a substrate (i.e. from the top of a circuit substrate to the bottom for grounding).

The examiner points to the newly cited Maruhashi et al. reference as evidence which teaches providing ground connections for electrodes on the top of a substrate by means of vias connecting to a bottom ground plane (e.g. Fig. 2).

**Conclusion**

**6. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen E. Jones whose telephone number is 703-305-0390. The examiner can normally be reached on Monday through Friday from 8 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Pascal can be reached on 703-308-4909. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

SEJ

A handwritten signature in black ink, appearing to read "Robert J. Pascal", with a large, sweeping loop at the end.